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NOTES ON THE BIOLOGY OF TWO PHYCITINES (LEPIDOPTERA: PYRALIDAE) ASSOCIATED WITH *TOUMEYELLA PINI* (HOMOPTERA: COCCIDAE) ON PINE

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Abstract.—The phycitines, *Laetilia coccidivora* (Comstock) and *Ribua innoxia* Heinrich were reared from slash pine, *Pinus elliottii elliottii* Engelmann, infested by the striped pine scale, *Toumeyella pini* (King), in northern Florida. *R. innoxia* is new to the USA. It was found previously only in Cuba and Puerto Rico, where it reportedly fed upon fungus on pineapple.

We report here the new distribution and record of association of *R. innoxia*, and its fall emergence and that of *L. coccidivora* in northern Florida. A comparison of the emergence patterns of the 2 species and significant differences in the appearance of their cocoons are presented.

Scale-infested slash pine, *Pinus elliottii elliottii* Engelmann, shoots were collected and caged on 30 September, 1985, at a pine seed orchard near White Springs, Florida, to investigate the natural control factors of the striped pine scale, *Toumeyella pini* (King). Two species of phycitine moths emerged, *Laetilia coccidivora* (Comstock) and *Ribua innoxia* Heinrich. *L. coccidivora* is predaceous on numerous species of scale insects (Heinrich 1956). *R. innoxia* has not been reported from the USA, and information on its biology is fragmentary. It had been found only in Cuba and Puerto Rico and is considered to be a scavenger or mycetophage (Heinrich 1956).

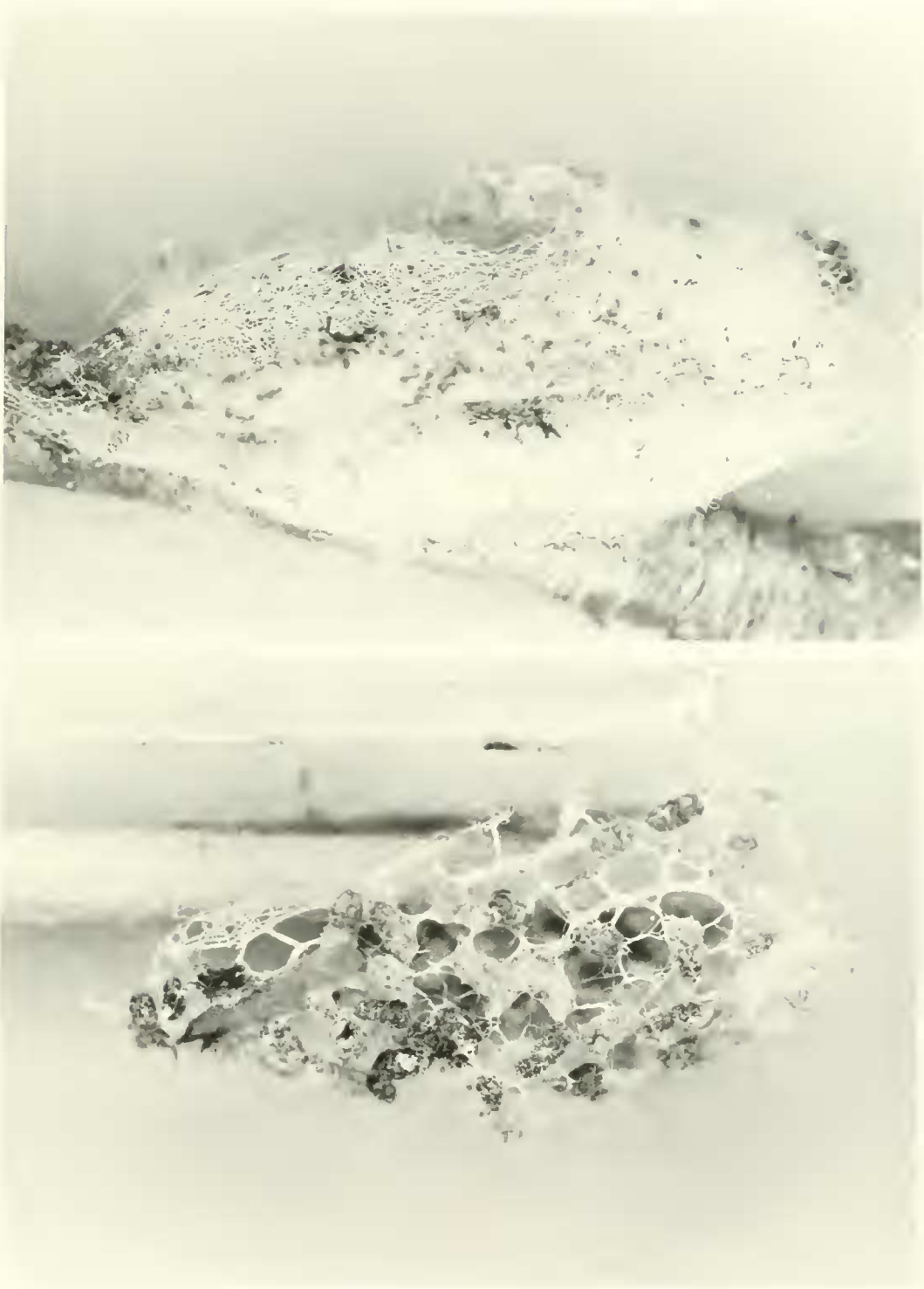
Methods

A total of 100 scale-infested terminals within reach of the ground were cut from a number of pines. The foliage was trimmed to ca. 2 cm to fit the cages and the twigs were cut to 10 cm including the buds. The twigs were caged individually in 5 cm diam. × 8.5 cm long clear plastic vials with snap lids. Water was not used with the twigs, as the scale crawlers were about to hatch. A 1 cm hole was cut out of each lid and a piece of fine mesh nylon was glued to cover the inside of the hole. Thus, aeration was provided, yet scale crawlers and other insects that might emerge were retained. The insects were reared at ambient indoor temperatures. The phycitines were larvae at this time.

The cages were examined daily until no moths appeared over a 2-week period. Moths were removed each evening as they emerged and were frozen until they could be mounted and identified. The number and species of moths emerging by date were recorded.

Results and Discussion

Ninety-four *L. coccidivora* were reared from 46 twigs, and 18 *R. innoxia* came from



Figs. 1, 2. 1, Cocoon of *Lactilia coccidivora*. 2, Cocoon of *Ribua innoxia*.

24 twigs. No moths were found in 39 cages. Cocoons of the two phycitines differed greatly. The cocoon of *L. coccidivora* is similar to that made by many Lepidoptera that pupate above ground: an elongate, white, densely silked, but soft enclosure (Fig. 1). Larvae of *R. innoxia* formed a fragile, mesh or netlike cocoon composed of silk and frass (Fig. 2).

Emergence of *L. coccidivora* started on 18 Oct., with peak emergence between 27 Oct. and 9 Nov. and decreased through 17 Nov., with the last 2 moths appearing between then and 1 Dec. Moths of *R. innoxia* began to emerge on 4 Nov., more than 2 wk after *L. coccidivora*. Only 1 or 2 moths emerged occasionally until the last one appeared on 13 Dec.

Holes in the integument of the scales, caused by feeding of *L. coccidivora* larvae, were common. The relationship between *R. innoxia* larvae and the scales was not established. Large amounts of "honeydew" were produced by the scales, and this substance was infested with sooty mold, *Capnodium* sp.

Heinrich (1956) postulated that *R. innoxia* larvae feed upon fungus; his type series were associated with fungus on pineapple, *Ananas comosus* (L.) Merrill, growing in Cuba. Our brief observations suggests a mycelium-feeding habit for the larvae. The opinion that the larvae of *L. coccidivora* and *R. innoxia* have diverse feeding habits is supported by taxonomic studies of the adults (Heinrich 1956). *Laetilia* and *Ribua* are not closely related genera. *Laetilia* appears to be allied to some of the cactus-feeding phycitines, whereas *Ribua* shows affinities to some of the stored products pests, particularly the Indian meal moth, *Plodia interpunctella* (Hubner). Further work is needed to establish with certainty the feeding habits and host of *R. innoxia*.

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